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VACA VALLEY RADIO CLUB

VACAVILLE , CALFORNIA

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FEBRUARY, 2013

There Is No President's Message This Month.

Unfortunately, Marcus is extremely busy doing his best to serve all members equally. His efforts to find a meeting room have so far, been met with several problems. With so much on his shoulders and trying to run a business would be difficult for anybody. I feel his interest in the club is on the top of his priorities but one person can only do so much.

I've always felt that communication via newsletters is an important vehicle to keep the members interested in their organization so even though this is two weeks late I went ahead and put it online.

Jerry, KJ6SCC

Treasurer's Report

General Fund: $1976.14

Repeater Fund: $766.00

Total: $2742.14

This is my first try at the newsletter for the Vacavalley Radio Club.

I had to put the format for the newsletter from scratch since I use a different publishing program than Jerry did.

I have no problems with any kind of criticism from anybody because it can only help to improve its content.

I would appreciate comments from the members about what you would like to see in the way of articles. The club obviously has wide varying interests and I'll do my best to research any subject and/or photographs you would like to see

So, fire away, I look forward serving you to the best of my ability.

Jerry, KJ6SCC

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Meeting Notes from Wed. 9 Jan., 2Ø13

Club President Marcus Maclean (KI6WDX), began the new year by calling the January, 2Ø13, general membership meeting of the Vaca Valley Radio Club to order at 1945 hours, and leading the pledge of allegiance to our nation's flag.

Since both the Treasurer and Recording Secretary were absent, no financial or activity reports were presented. And, with only a few members in attendance, along with insufficient board members to hold a quorum, the focus of the meeting was changed to general topics, announcements, and upcoming events.

Marcus made two stunning announcements to the group: the first was that Tom Christman (KE6MDM) had resigned his position as a voting board member for personal reasons, and second was that Jerry Olive (KD6WKY) had also stepped down from active participation in the VVRC due to schedule conflicts and personal reasons. Jerry's departure leaves a number of very important, key positions unfilled and in need of members to step in and replace him if we're going to continue functioning as a club. First on the list is his office of Club Secretary, followed by: coordinator of the annual March of Dimes event; coordinator of the annual Field Day event; coordinator for the annual Merriment on Main Christmas Tree lighting; VVRC newsletter editor; and member of the VVRC's VE team. He has, however, agreed to continue his once-a-month commitment as Net Control Operator for our Tuesday night VVRC 2-meter net.

Marcus went on to announce that Art Miller (KI6UXE) had already volunteered to step up and fill Tom's position on the board, Jerry Bowen (KJ6SCC) had already volunteered to take over editing the newsletter, and Skip Lawson (AF6HC) volunteered to fill in temporarily as the Recording Secretary. However, we still need more members willing to step up and shoulder one of the remaining positions and make it their own. This club will not survive without action.

The membership was then briefed on the latest developments concerning the access ramp to the fire house. The entire project has been put on hold indefinitely because the leader of the scout troop that was going to take the lead on the project is out of the country on flight duty with the USAF. Consequently, until the ramp project is completed, we may have to begin holding our monthly meetings at other locations that will accommodate those members who would need the ramp to get into the fire house.

The discussion then turned to the upcoming Field Day event scheduled for June 22-23. Two big questions were posed to the membership: "*where*" should we operate from, and, most importantly – WHO is willing to commit to this event? Rick Durrenberg

(KJ6OOM) volunteered to do some follow-up checking on a couple of possible locations, and report back with his findings at the February meeting.

Marcus had planned to finish the evening by presenting a "show-'n-tell" and audio/visual presentation about his "J-Pole" antenna project, but Murphy's Law prevailed and the computer failed to interface with the fire house AV equipment so the presentation was scrubbed.

So, once again, with the coffee all gone and no further business to conduct, the meeting was adjourned at 2Ø3Øhr.

Respectfully submitted,

"*Skip*" Lawson AF6HC

Around The Shack
By **Jerry Bowen KJ6SCC**

At the January meeting I was assigned to take over the Vaca-Valley Radio Newsletter when Jerry Oliver resigned. For me it will be an interesting new learning curve trying to fill the very valuable Jerry Oliver's shoes.

I'm new to the Vaca-Valley radio club and most of the members have no idea who I am, so I thought I would let the members know a little about my past.

I was born in North Dakota and our family moved to California in 1950 when my dad got fed up with the politics in the Employment Service.

Moving to California was quite a shock for a ND farm boy. The school I had to attend was 2 to 3 years behind what I already learned in North Dakota and was infested with a total lack of discipline.

Being bored with the education I was getting I looked for something to do when I came across an article about crystal sets, so I built one. I was fascinated by that little piece of hardware and eventually graduated learning more about electronics and eventuallu ham operating. I received my novice license (WN6BIB) in 1953. Six months later I passed the General Class

I built all my equipment except for the receiver, an RAX-4 military rig, that I bought at the then fabulous surplus store at the Oakland Airport. I mostly worked CW with about 50 watts of power from a pair of 807s into a folded dipole antenna on 40 meters.

One of the risky practices I indulged in during those days was lighting my cigarettes by drawing an arc off the plate cap of one of my 807s with a pencil. Later I began to notice little black spots on my lips and fingertips. An experienced ham "enlightened" me about the effects of lighting smokes that way. Needless to say I stopped and the little black spots finally went away.

I went into the US Navy at age 17 for the next ten years and unfortunately let my license expire. After receiving excellent schooling and serving on the USS Kawishiwi, AO-146 and the USS Buchanan, DDG-14, I finished my Navy time teaching Missile Weapon Control Systems for two years at Mare Island.

The next 26 years were spent working at Mare Island in Shop 36 (Weapons Systems) and later Shop 67 (Electronics Shop). I took an early retirement as an Elex/Weapons Systems Project General Foreman when the opportunity came up because I was tired of all the misinformation meetings and politics. Guess I was a bit of a chip off of my dad's attitude. I tried one year as an independent commercial Salmon fisherman because I had a 38-foot boat that I had re-floated and rehabbed while I was stationed at Mare Island and supplemented my income by playing guitar & banjo with various bands for a few years. I also delved into gold mining and wrote the newsletters and publications for the United Prospectors Mining club.

Later I wrote a history column for the Vacaville Reporter and became very involved with local history in the Vacaville Heritage Council and served on several committees advocating for a museum in Fairfield and later Suisun.

I began collecting old tube radios to renovate and one day I saw an ad for a class in Valle jo for Technician Amateur License at the Vallejo Ham Radio Club. I passed the Technician License and then joined the Vacaville Ham Radio Club. I took the test for General Class at the club and passed it and soooo, here we are now.

The equipment on the top two shelves date from the 1950s to about 1980. On the desk top, is a 2012 Yeasu FT-857D

I have an avid interest in vintage ham equipment and have set up a station with the type of equipment I dreamed of back in the early days. It takes up 95% of the space on my operating area and the other 5% is a Yaesu FT897 which I have to say is much more efficient and smaller and much lighter. I am always amazed at the huge improvements in the equipment today and look forward to learning all I can and working with you great folks at VVR.

VACA VALLEY RADIO CLUB--2013

ELECTED OFFICERS

President: Marcus MacLean, KD6WDX
Vice President: Mike Vieira, W6MAV
Secretary: Skip Larson, AF6HC
Treasurer: Bob Hewitt, K6HEW

BOARD OF DIRECTORS

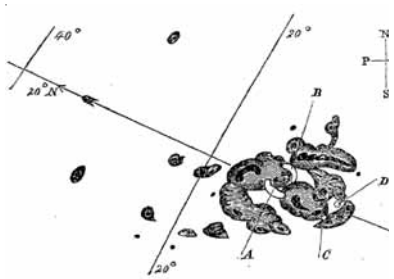
Director: Mike Carney, N6SEE
Director: Chris Jones, KD7TQO
Director: Antonio Del Rio, N6ZGB
Director: Tom Christman, KE6MDM
Director: Clyde Hood, WH6AB

APPOINTED POSITIONS

Net Control Chairperson: Jerry Olive, KD6WKY
Activities Chairperson: Clyde Hood, WH6AB
Newsletter Editor: Jerry Bowen, KJ6SCC
Newsletter Publisher & Distributor: Bob Hewitt, K6HEW

The Carrington Event And Its Effect On The Earth

The Carrington Event of 1859 was the first documented event of a solar flare impacting Earth. The event occurred at 11:18 a.m. EDT on September 1,1859 and is named after Richard Carrington, a solar astronomer. He witnessed the event through his private observatory telescope and sketched the sun's sunspots at the time. The flare was the largest documented solar storm in the last 500 years, NASA scientists have said.



Carringtons sketch of the flare

1859 News Articles of the Solar Flare

August 28 - September 2, 1859…The Storm of 1859 was the first event recorded by humans from a truly global perspective, not to be repeated until the eruption of Krakatoa in 1883 turned the sunsets red and crimson the world-over. Newspapers such as the New York Times were active in running extensive stories about the 1859 solar storm, and collecting reports from other countries. The great geomagnetic storm of 1859 is really composed of two closely spaced massive worldwide auroral events. The first event began on August 28th and the second began on September 2nd. It is the storm on September 2nd that results from the Carrington-Hodgson white light flare that occurred on the sun September 1st.

Over the next few days during and after the magnificent aurora borealis filled the skies newspapers were filled with articles about the display and problems with the telegraph systems. (Note all incorrect spelling is as printed in the newspapers.)

New York. August 29…Singular Effect of the Uarora Borealis on the Telegraph Wires. The Superintendent of the Canadian Telegraph Company's line telegraphs as follows in relation to the effect of the Aurora Borealis last night: '…so completely were the wires under the influence of the Aurora Borealis, that it was found utterly impossible to communicate between the telegraph stations, and the line had to be closed.' The same difficulty prevailed as far South as Washington.

THE VVRC WELCOMES YOU

The Vaca Valley Radio Club has proudly served the Northern Solano County Area since 1988. We pride ourselves in providing a friendly place for radio amateurs to meet and improve their operating skills.

We participate in public service events throughout the year and are always ready to assist with communications during times of emergency.

Browsw our website for more information about our club. If you have any questions please e-mail us at w6vvr@w6vvr.net or call 707-448-5665 for assistance

The Repeater is Published by the Vaca Valley Radio Club, PO Box 143, Elmira, CA 95625-0143, An ARRL Affiliated Club. Founded 1987, Chartered 1988. General Meetings: 2ndWednesday of each month at 7:30 PM 420 Vine Street Fire Station.

Wheelchair accessible

New York Herald, August 29, 1859…At one time the northern portion of the heavens assumed an almost blood red appearance, while here and there long streaks of light shot up from the horizon to the zenith. These rapidly changed their place and their form until they extended over the greater part of the sky, breaking through the reddish hues and finally covering nearly the whole face of the heavens

San Francisco Herald, September 5, 1859…The whole sky appeared to undulate something like a field of grain in a high wind; the waters of the Bay reflected the brilliant hues of the Aurora. Nothing could exceed the grandeur and beauty of the sight; the effect was almost bewildering, and was witnessed with mingled feelings of awe and delight by thousands. Nebulous matter, like that which furnishes material for meteoric showers, or the zodiacal light, and is known to exist in the planetary spaces, is probably the cause of these displays. He regards the light as emitted by the friction of the earth, plunging with its atmosphere, through this vapor, the velocity being sufficient, despite the rarity of the materials, to develop the luminosity

New Orleans Daily Picayune, September 3, 1859…It is an indisputable fact that old topers, wholesale consumers of the alcoholic fluid, whose capacious stomachs could retain an enormous quantity of the "creature" without their heads or legs being in the least affected by it, have fallen dead drunk last night and last Sunday night, before they had imbibed their regular allowance, and through no other cause than the mysterious influence upon their system of the unexplained electrical phenomenon, shining overhead

The Illustrated London News, September 24, 1859…The French telegraph communications at Paris were greatly affected, and on interrupting the circuit of the conducting wire strong sparks were observed. The same thing occurred at the same time at all the telegraphic station in France**.**

Louisville KY, August 31…The telegraph wires between this city and New York, as also throughout Canada, were interrupted by the unusual overcharge of electricity, which always pervades the atmosphere during the continuance of this phenomenon.

Washington Daily National Intelligencer, Tuesday, September 6, 1859…The wire was then worked for about two hours without the usual batteries on the auroral current, working better than with the batteries connected. This is the first instance on record of more than a word or two having been transmitted with the auroral current**.**

Washington Evening Star News, September 2, 1859…Who now will dispute the theory that the Aurora Borealis is caused by

Visit the Repeater online courtesy of Bob K6HEW at: vacavalleyradio.net

Club repeater in Vacaville:W6VVR 145.470 MHz(-) pl 127.3
The W6VVR net call is Tuesday evenings at 8pm on the club repeater. All are invited to participate in this weekly meeting on the air. 73!

Additional local repeaters
WV6F 224.200(-)
WV6F 440.025(+)
WV6F 1291.900(-)

electricity.

The Daily Chronicle and Sentinel, Augusta, Georgia, Thursday AM, September 8, 1859…During the auroral display on Thursday night in Boston some curious phenomena were witnessed in connection with the telegraph wires. The following conversation, says the Boston Traveler, between the Boston and Portland operators on the American telegraph line, will give an idea of the effect of the Aurora Borealis, on the working of the telegraph wires: Boston operator, (to Portland operator)—"Please cut off your battery entirely from the line for fifteen minutes." Portland operator-"Will do so. It is now disconnected." Boston-"Mine is disconnected, and we are working with the auroral current. How do you receive my writing?" Portland-Better than with our batteries on. -Current comes and goes gradually." Boston-"My current is very strong at times, and we can work better without the batteries, as the Aurora seems to neutralize and augment our batteries alternately, making current too strong at times for our relay magnets. Suppose we work without batteries while we are affected by this trouble." Portland-"Very well. Shall I go ahead with business?" Boston-"Yes. Go ahead." The wire was then worked for about two hours without the usual batteries, on the auroral current, working better than with the batteries connected. The current varied, increasing and decreasing alternately, but by graduating the adjustment to the current, a sufficiently steady effect was obtained to work the line very well. This is the first instance on record of more than a word or two having been transmitted with the auroral current. The usual effects of the electric storm were manifested, such as reversing the poles of the batteries, etc.

New York Times, Sept. 5, 1859…In addition to the technological issues posed by these 'earth currents' entering the telegraph lines, was the very real potential for direct human injury. The most spectacular, and now legendary, story is told by Frederick Royce: a telegraph operator working in Washington DC. at his station between 8 and 10 PM. " I did not know that the Aurora had made its appearance until 8 or 81/2 o'clock. I had been working 'combination' to Richmond, and had great difficulty from the changing of the current. It seemed as if there was a storm at 'Richmond'. Concluding that this was the case, I abandoned that wire and tried to work the Northern wire, but met with the same difficulty. For five or ten minutes I would have no trouble, then the current would change and become so weak that it could hardly be felt. It would then gradually change to a 'ground' so strong that I could not lift the magnet. While the Aurora lasted the same phenomena were observable. There was no rattling or cracking of the magnet, as is the case in a thunderstorm. I looked at the paper between the arrestors, but found no holes. Philadelphia divided the circuit at the request of New York, and we succeeded in getting off what business we had. The Aurora disappeared a little after 10 o'clock - after which we had no difficulty, and we worked through to New York. During the display I was calling Richmond, and had one hand on the iron plate. Happening to lean towards the sounder, which is against the wall, my forehead grazed a ground-wire which runs down the wall near the sounder. Immediately, I received a very severe electric shock, which stunned me for an instant. An old man who was sitting facing me, and but a few feet distant, said that he saw a spark of fire jump from my forehead to the sounder. The Morse line experienced the same difficulty in working."

According to NOAA, the Carrington solar storm event sparked major aurora displays that were visible as far south as the Caribbean. It also caused severe interruptions in global telegraph communications, even shocking some telegraph operators and sparking fires when discharges from the lines ignited telegraph paper, according to a NASA description. Read more at: http://phys.org/news/2013-01-ar1654

Recent Power Failures From Solar Flares

1989…March 1989…A powerful solar flare set off a major March 13 power blackout in Canada that left six million people without electricity for nine hours. According to NASA, the flare disrupted electric power transmission from the Hydro Québec generating station and even melted some power transformers in New Jersey. This solar flare was nowhere near the same scale as the Carrington event, NASA scientists said

Oct. 28, 2003… The sun unleashed a whopper of a solar flare. The intense sun storm was so strong it overwhelmed the spacecraft sensor measuring it. The sensor topped out at X28, already a massive flare), but later analysis found that the flare reached a peak strength of about X45, NASA has said. The solar storm was part of a string of at least nine major flares over a two-week period.

2006: X-Ray Sun Flare…When a major X-class solar flare erupted on the sun on Dec. 5, 2006, it registered a powerful X9 on the space weather scale. This storm from the sun "disrupted satellite-to-ground communications and Global Positioning System (GPS) navigation signals for about 10 minutes," according to a NASA description. The sun storm was so powerful it actually damaged the solar X-ray imager instrument on the GOES 13 satellite that snapped its picture, NOAA officials said.

Solar flares predicted to raise havoc in 2013

A solar 'superstorm' is coming and we'll only get 30-minute warning

According to Jason Major, in a January 14, 2013 *Universe Today* article, "…the latest giant sunspot region AR1654 is steadily moving into position to face Earth, loaded with plenty of magnetic energy to create M-class flares—moderate-sized outbursts of solar energy that have the potential to cause brief radio blackouts on Earth and, at the very least, spark bright aurorae around the upper latitudes.

A solar "superstorm" could knock out Earth's communications satellites, cause dangerous power surges in the national grid and disrupt crucial navigation aids and aircraft avionics, a major report has found.

A similar event today would put severe strain the electricity grid, where transformers are particular vulnerable to power surges, as well as degrading the performance of satellites, GPS navigation, aviation and possibly the mobile phone network, particularly the new 4G network, which relies on GPS satellites for timing information.

In the past half century, there have been a number of "near misses" when an explosive "coronal mass ejection" of energetic matter from the Sun has been flung into space, narrowly bypassing the Earth.

"Satellites are certainly in the front line of a superstorm. They are part of our infrastructure and we have concerns about their survival in a solar superstorm," said Keith Ryden, a space engineer at Surrey University.

Questions about the future effects on Ham Radio

I can't help but wonder how a major solar flare equal to the one in 1859 might affect current ham radio equipment.

Will major damage to sensitive modern components occur, especially if the antenna is hooked up during the event?

Is it possible that vintage equipment with tubes might be able to survive the onslaught?

Would it be possible to stop any damage to modern systems if antennas were disconnected and the units shielded and grounded?

With only thirty minutes notice of an impending major flare aimed directly at the earth it will more than likely not be enough time to protect sytems from damage.

Perhaps someone knowledgeable about the above questions could give us some thoughts on these questions. Then again all this may be just another boondoggle such as the YK2 baloney in 2000 that had everyone concerned about nothing at all.

What do *you* think?

Jerry; KJ6SCC

2012 ARRL 10 GHz & up Contest Results

Longest distance 10 GHz Only Category

Mt. Vaca used by California hams to compete for top honors

QST magazine, Feb 2013, pg 88.

The ARRL 10 GHz and UP contest took place August 18-19 and September 15-16, 2012.

Ron, K6GZA, and Rex, KK6MK, were on Mt. Vaca (CM88wj) between California's Bay area and Sacramento. They worked Robin, WA6CDR and Mel, W6JBD who were 0n Mt. Potosi (DM25gw) in southern Nevada. Midway between the two peaks lies the impediment of the Sierra Nevada Mountain Range (e.g. Yosemite), but signals were Q5 0n SSB and contacts completed in short order.

2012 Marks All-Time High for Amateur Radio Licenses

ARRL, 01/15/2013

As 2012 came to a close, ARRL VEC Manager Maria Somma, AB1FM, had a good reason to cheer: The number of radio amateurs in the US reached an all-time high of almost 710,000. "2012 was definitely a banner year for the number of Amateur Radio operators here in the US," she said. "It is amazing to see these new numbers and to know that Amateur Radio is experiencing such a healthy trend."

In looking at new and upgraded licenses, as well as licensees per ARRL Division (see the charts below), Somma also crunched the numbers looking for growth within each license class — and all of Amateur Radio — over the last 40 years. "This is an all-time high for Technician, General and Amateur Extra class licensees," she said. "When looking at the three current license classes, the number of Technicians, Generals and Amateur Extras peaked in December at 345,369, 163,370 and 130,736, respectively."

Somma explained that the total number of US amateurs in the FCC database also continues to grow each year: "As of December 31, 2012, the number of licensees reached an all-time high of 709,575; year-end totals were 702,056 for 2011 and 696,041 for 2010. The number of licensees increased at an average rate of 21 per day, while the number of US licensees has increased by 7 percent since 2008!" More than 3000 new licenses were issued in 2012 than in 2011, while upgraded license activity remained steady in 2012.

In the past 40 years, the number of Amateur Radio operators in the US has grown at a remarkable rate:

December 1971: 285,000

December 1981: 433,000

December 1991: 494,000

December 2001: 683,000

December 2012: 709,500

Source: 1971, 1981, 1991: print editions of Radio Amateur Callbook. 2001, 2012: www.ah0a.org/FCC/Graphs.html. **Please note:** While the number of licensees has grown considerably over the years, we realize that these numbers include some who are no longer active in Amateur Radio. A recent survey of ARRL members, however, indicates that more than 80 percent of those responding are active.

BSA to Offer Amateur Radio Operator Rating Strip

The Boy Scouts of America (BSA) has approved an Amateur Radio Operator rating strip for Scouts and Scouters to wear on their uniforms. According to BSA Communication Services Director Jim Wilson, K5ND, the strip recognizes the Scout or Scouter's availability as an Amateur Radio operator for communication services for events and activities, as well as emergencies. All registered youth members and adult leaders who also hold a valid FCC-issued Amateur Radio license of any class are eligible to wear the rating strip.

"Last year, the BSA Awards and Insignia Committee introduced the Morse Code Interpreter Strip upon the recommendation of the BSA's National Radio Scouting Committee," Wilson told the ARRL. "We are always looking for ways to promote Amateur Radio, both within Scouting and to the world. The National Radio Scouting Committee thought this new Amateur Radio rating strip was a wonderful way to do exactly that, as it readily identifies to everyone that the wearer is a licensed radio amateur, prepared to be useful and to help others."

Wilson, who heads up the National Radio Scouting Committee, said that the Amateur Radio Operator rating strip is similar to the Amateur Radio Operator badge offered as a proficiency badge by Scouts Australia, as well as the badge recently introduced by Scouting Netherlands. It follows in the footsteps of the Scout Radioman personal interest badge for Senior Scouts and Explorer Scouts that was offered by the Boy Scouts of America in the 1940s.

The strip is worn on the right sleeve.

A Ghost Story

We don't generally give much credence to ghost stories, but the following appears so intrinsically reasonable in view of the awful doom that doubtless awaits those who ignore its meaningful message that we cannot for a moment doubt its worth. That apparitions do not always wander without sufficient cause is proved by the well-attested fact that we give below.

One night Thumbelina, a ham operator's wife, sat reading in her bedroom when the clock on the dresser struck twelve and as the last stroke reverberated through the room, the door was flung wide open! In the act of raising her head she saw what at first she thought was an unknown intruder. But no, it was the ghostly figure of her former late husband! She screamed and fell senseless on the floor!

Members of the family who had not already retired rushed to Thumbelina's room. Restoratives were administered, and when she had regained her faculties, and being of strong mind, she felt disposed to consider the whole agony she had undergone was a result of reading too many books about the supernatural.

However, she considered it advisable that she should stay in her room, lest any return of what she considered a nervous affliction should distress her and alarm the family once again.

A few days later, feeling stronger and in better spirits than she had been, Thumbelina retired alone to her bedroom, and went to bed a little before ten o'clock. Exactly as the clock struck twelve, she was awakened from sleep and distinctly beheld the apparition she had seen before. It advanced from the table until it stood beside the curtains next to her bed. She felt as if her very blood were retreating with icy chillness to her heart from every vein. The apparition of her beloved in life wore not it's benevolent aspect: the eyes once beaming with affection were now fixed with stern regard on the trembling, half dissolved being who, with the courage of desperation, implored him, "Jacob! Dear Jacob,! Why have you come again?"

"Thumbelina," slowly and solemnly the shadowy form, waving in his hand a page from the Vaca Valley Radio Club Newsletter, solemnly beseeched, "Thumbelina, please pay my Vaca Valley Radio Club dues, and let me rest in peace!"

PLEASE RENEW YOUR MEMBERSHIP

VACAVALLEY RADIO CLUB, INC.

MEMBERSHIP APPLICATION / RENEWAL FORM

Please Print & Fill in Completely — Dues are delinquent January 1st

Name: _____ Call Sign_____

Street: _____

City: _____Zip: _____

Phone: (_____) _____-_____OK to Publish ?(_____)

License Class: _____ ARRL Member ?(_____)

E-Mail Address_____

FAMILY Member (Spouse or Children)

Name: _____ Call Sign_____
License Class: _____ARRL Member ?(_____)

Name: _____ Call Sign_____
License Class: _____ARRL Member ?(_____)

Name: _____ Call Sign_____
License Class: _____ARRL Member ?(_____)

MEMBER Dues	$15.00	_____
Each Family Member	$ 2.00	_____
Student	$ 5.00	_____
Repeater/Autopatch donation		_____
Call/Name badge	$11.00	_____

Optional ARRL membership

ARRL dues	$39.00	
ARRL dues (Senior)	$36.00	

Senior is 65 yr or older with one time proof age

Total _____

Paid by CASH: _____ Check # _____

DATE: _____

Mail to : Vaca Valley Radio Club, PO Box 143, Elmira, CA 95625-0143